Space Weather Forecast

Issued on Thursday, 02 February 2023 at 01:12 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: No significant geomagnetic activity expected. Slight chance of Moderate solar activity throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low, with several low-level common class flares, the strongest of which was from a small sunspot near the northwest limb that will soon rotate off the disc. There are a total of five sunspot regions visible, with the only other notable one being a small region in the southeast. While magnetically simple, this has exhibited some slow growth. No Earth-directed CMEs (coronal mass ejections) have been observed on available imagery.

Solar Wind / Geomagnetic Activity: Observations of the solar wind were suggestive of Earth exiting one region of fast wind, from a coronal hole, and moving into another such region. Perhaps this also included a weak transient feature embedded in the wind, however this is very uncertain. This enhancement led to slightly elevated solar winds of around 440km/s by the end of the period. The magnetic field was also relatively weak at first, but became moderate after 01/15040 UTC. This included brief spells of Weak to Moderate southward pointed field. Quiet to Unsettled geomagnetic activity was observed.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity is forecast with the sunspots on the visible disc currently small and relatively simple. There is a very slight chance of Moderate class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs, although a slight glance cannot be ruled out from a CME later on day 2 (3rd), although this will likely miss. Current slightly elevated winds may become elevated for a time day 1 (2nd), due to ongoing effects from coronal hole sourced fast winds. Otherwise solar winds are expected to ease through the period, before the next similar enhancement occurs either by the end of day 4 (5th), or just beyond the forecast period. Geomagnetic activity is expected to be mainly Quiet to Unsettled with a chance of Active intervals. There is a slight chance of G1/Minor Storms, mainly day 1 (2nd) and day 4 (5th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	5	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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